SECTION 1: ESH&A MANUAL OVERVIEW

1.1 Approval Record

- Reviewed by: Document Control Coordinator (Hiliary Burns)
- Approved by: Manager, ESH&A (Sean Whalen)
- Approved by: Deputy Director (Tom Lograsso)

The official approval record for this document is maintained in the Training and Documents Office, 105 TASF.

1.2 Revision/Review Information

The revision description for this document is available from and maintained by the author.

1.3 Manual Table of Contents – Links to Sections 2 - 10

Section 1.0 **ESH&A MANUAL OVERVIEW** describes the manual purpose and scope, defines employees roles and responsibilities, outlines major regulatory drivers, discusses various program elements such as the ESH&A Strategic Plan, the Integrated Safety Management System (ISMS), the Safety Coordinator and Representative Program, the Safety Review Committee, Readiness Review, and Event Reporting, and provides links to the manual program sections.

Section 2.0 Quality Assurance describes the Laboratory's management systems and quality improvement processes, including documents and records tracking, procurement, receipt and inspection, and suspect and counterfeit items.

Section 3.0 Training Program provides access to a description of the Laboratory's training for the safe and productive completion of work responsibilities.

Section 4.0 Industrial Hygiene describes the control of diverse workplace hazards, including all chemical hygiene programs, ergonomics, respiratory protection, and the control of blood borne pathogens.

Section 5.0 Industrial/General Safety includes regulatory requirements primarily derived from 29 CFR 1910 (General Industry) and 29 CFR 1926 (Construction Standards).

Section 6.0 Environmental Protection encompasses the general overriding environmental protection requirements that apply at Ames Laboratory.

Section 7.0 Radiation Protection is designed to promote the safe use of ionizing radiation and non-ionizing radiation, e.g., radioactive materials, radiation generating devices, lasers, and UV sources.

Section 8.0 Fire Protection provides an overview of procedures related to hot work, flammable chemical storage, and employee response to fires.

Section 9.0 Emergency Preparedness and Site Security describe responses to emergency situations, severe weather, fire alarms, and security incidents.

Section 10.0 Assessment Program describes efforts to identify and correct deficiencies, employee and supervisor observations and walk-through and audit findings.

1.4 Purpose and Scope

The purpose of the Environment, Safety, Health & Assurance (ESH&A) Program Manual is to provide Laboratory personnel with resources to assist them in the safe conduct of operations and research. Individual manual sections provide detailed programmatic information and/or links to applicable regulations, orders, Laboratory or Contractor (ISU) policies, plans, procedures, manuals, and forms. This manual, in its entirety, serves as the Laboratory Safety Manual and Chemical Hygiene Plan.

The ESH&A Program Manual encompasses all research, work, and environmental activities at Ames Laboratory.

1.5 Employee Roles and Responsibilities

This Manual applies to all Laboratory staff, affiliates, and students. Employees are responsible for performing work safely and protecting the health of themselves and others, the Laboratory, and the community. Line management has additional responsibilities as defined in Policy 40000.003, Line Management Roles and Responsibilities at Ames Laboratory. All personnel are responsible for understanding their roles and performing their duties as expected.

1.6 Regulatory Overview

There are multiple regulations, orders and policies which impact Laboratory activities. Manual sections 2 – 10 include specific regulatory information. An overview of three significant regulatory drivers is included here:

1.6.1 10 CFR Part 851 – DOE Worker Safety and Health Program

Department of Energy facilities are not regulated by the Occupational Health and Safety Administration (OSHA) because they are Federal facilities, and OSHA rules generally do not apply unless specifically referenced. Ames Laboratory employees are protected through the provisions in Part 851, which parallels OSHA in many aspects, but provides additional protection in health and safety areas unique to DOE facilities such as beryllium contamination, nanoparticle research, or ergonomics. Further, in several instances, the requirements in 851 are more stringent than those found in the OSHA rules, and may be more in-line with cutting edge research and technology.

Ames Laboratory implements 851 through several programs, including Integrated Safety Management, Readiness Review, and the Radiological Protection Program. See individual sections for specific references.

1.6.2 10 CFR Part 835 – Occupational Radiation Protection

DOE facilities are regulated through Part 835, and are not subject to parallel federal or state rules. This impacts joint Ames Laboratory/ISU researchers who occupy space in campus buildings. Radiological activities in ISU buildings are regulated through the State of Iowa Department of Public Health and the ISU Department of Environmental Health and Safety (EH&S). Conversely, university personnel occupying Ames Laboratory space must comply with Part 835. While the rules are similar, there are different compliance and reporting structures.

1.6.3 Environmental Protection Agency and Executive Orders

Environmental Protection Agency (EPA) regulations apply at Ames Laboratory through administration of Executive Orders. There is no separate body of regulation. Further, DOE facilitates are subject to additional requirements through Executive Orders related to green purchasing, sustainability, and recycling.

1.7 ESH&A Strategic Plan

The Ames Laboratory ESH&A strategic plan establishes a vision and mission, and defines goals, objectives, and tasks designed to guide comprehensive health and safety improvement efforts from January 1, 2016 through December 31, 2020 in support of Laboratory Priority Goals. The plan also defines ESH&A strategies for improving expertise and establishing a mentoring system. The Strategic Plan builds on Integrated Safety Management and Environmental Management System principles, and provides a framework for continuous improvement.

A summary of vision, mission, goals, and guiding principles is available in a PDF download.

1.8 Integrated Safety Management

This sub-section applies to all employees.

1.8.1 Background

The Laboratory's Integrated Safety Management (ISM) System is required by the Ames Laboratory Contract (DEAR 970.5223-1 *Integration of Environment, Safety and Health into Work Planning and Execution (DEC 2000)*). Ames Laboratory is also required to maintain a written worker safety and health program according to 10 CFR Part 851 *Worker Safety and Health Program*.

1.8.2 Program Information

1.8.2.1 ISMS Objective and Definition

The Integrated Safety Management System (ISMS) and Worker Safety and Health Program Description communicate the Laboratory's commitment to safety and sound environmental practices. This policy provides additional information on how the Laboratory addresses the principles and function of Integrated Safety Management. The Laboratory's safety programs, policies, procedures, and practices are the mechanisms through which the Laboratory's Integrated Safety Management System is implemented and that safety considerations are integrated into all aspects of the Laboratory's work, from planning to completion to protect workers, the public, and the environment. The guiding principles of Integrated Safety Management (ISM) are also supported by the Laboratory's Quality Assurance Program plan.

1.8.2.2 Employee Involvement

Ames Laboratory and Iowa State University recognize that a successful Environment, Safety, and Health (ES&H) program is only possible when every employee in the organization is fully empowered to be a participant. The Laboratory's Integrated Management System is founded on the fundamental principles that line management is directly responsible for the protection of the public, the workers, and the environment; and safety and protection of the environment are fully integrated into research and support activities. These

principles are critical to Ames Laboratory achieving mission success as a DOE national laboratory. Participation in the ES&H program is not only encouraged but required as part of employees' job responsibilities.

1.8.3 Roles and Responsibilities

All Employees:

- Promote and comply with the principles and functions of the Laboratory's Integrated Safety Management Program.
- being mindful of work conditions that may impact safety
- assisting each other in preventing unsafe acts or behaviors
- reporting unsafe work conditions to their supervisor or the ESH&A office
- Participation in safety activities, such as reading safety and operational documents, attending training, and conducting workplace observations.

ESH&A:

- Administer the Laboratory's Integrated Safety Management System and maintain related processes and appropriate documentation.

1.8.4 Training

General Employee Training (GET) for New Employees (AL-001) incorporates several components, including Integrated Safety Management training.

1.8.5 References

DEAR 970.5223-1: Integration of Environment, Safety and Health into Work Planning and Execution (DEC 2000)
DOE Policy 450.4: Safety Management System Policy
10 CFR Part 850: Chronic Beryllium Disease Prevention
10 CFR Part 851: Worker Safety and Health Program
Integrated Safety Management System (ISMS) and Worker Safety and Health Program Description (Plan 10200.016)

1.9 Safety Coordinators and Representatives

This sub-section applies to Division, Institute, and Program Directors, Group Leaders, Department Managers, employees designated as safety coordinators or representatives, and the ESH&A office, which administers the safety coordinator and representative program.

1.9.2 Background

The purpose of a safety coordinator and representative program is to provide an additional network by which relevant ES&H information is disseminated to Ames Laboratory employees. Safety coordinators and representatives can serve as liaisons between employees and supervisory personnel and frequently interact with the ESH&A office on safety issues. Coordinators and representatives provide information on the status of safety conditions in the divisions, programs, and department, and they receive information on safety issues such as lessons learned, requests for information on chemical usage, and requests for assistance with remediation of safety discrepancies.

1.9.3 Program Information

The basic elements of the program are: designation of safety coordinators by division and program directors or department managers, designation of safety representatives by group leaders or department managers, and initial orientation by ESH&A. The Safety Coordinator and Representative Program plan provides additional programmatic information.

1.9.4 Training

Specific training for safety coordinators and representatives is provided via the following institutional training courses:

- Safety Coordinator & Representative Orientation (AL-031)
- Hazard Identification (AL-130)
- Machine Safeguarding (AL-131)

1.9.5 Roles and Responsibilities

Division, Institute and Program Directors and Department Managers

Division, Institute, Program Directors and Department Managers (herein referred to as Program Directors), shall officially designate Safety Coordinators, where appropriate, by completing the Safety Coordinator Agreement form [Form 10200.090] by notifying ESH&A when new Safety Coordinators are assigned and by completing the attached job description and providing a copy to ESH&A, G40 TASF.

Group Leaders

Group Leaders shall officially designate Safety Representatives, where appropriate, by completing the Safety Representative Agreement Form [Form 10200.091] and providing a copy to ESH&A, G40 TASF. Group Leaders shall notify ESH&A via memo or e-mail when new Safety Representatives are designated.

Activity Supervisor

A person designated by the group leader with responsibility for supervision and coordination of the development and/or operation of an activity.

Safety Coordinators/Safety Representatives

Safety Coordinators/Representatives shall perform the functions noted in the job descriptions as appropriate for the individual division/program or group.

Employees

Ames Laboratory employees shall participate in the Laboratory's Environment, Safety and Health Program by performing work in accordance with established practices and procedures. Employees shall engage with supervisory personnel, Safety Coordinators/Representatives and ESH&A personnel on environment, safety and health issues as indicated.

Environment, Safety, Health, and Assurance (ESH&A)

ESH&A shall be responsible for implementing the Safety Coordinator & Representative Program; this includes offering training modules and coordinating three meetings per year.

1.9.6 References

Safety Coordinator and Representative Program (Plan 10200.009)

1.10 Safety Review Committee and Readiness Reviews

This sub-section applies to Program Directors, , Group Leaders, Activity Supervisors, and the ESH&A office, which is charged with administering readiness reviews.

1.10.1 Background

The Safety Review Committee (SRC) was established by the Ames Laboratory Director in 1992. Its roles are defined by the SRC Charter. The committee serves in an advisory capacity to the Director, recommending policy and procedures related to safety issues in work planning and control (WP&C) and the safe conduct of operations and research (SCOR). Ames Laboratory utilizes the Readiness Review procedure to fulfil requirements for WP&C and SCOR. The membership of the SRC includes representatives of Science and Technology Division, Facilities and Engineering Services, and Environment, Safety, Health and Assurance.

1.10.2 Program Information

1.10.2.1 Readiness Reviews

Identification of Activities

Group leaders identify activities for which they have management responsibilities and as appropriate, assign authorities and responsibilities to other members of the group. An activity is one or several action(s), process(es), and/or equipment coordinated to perform a task. Additional information relating to the identification of activities is in the procedure for Readiness Review and on the Readiness Review webpage.

Activity Hazard Identification and Categorization

Ames Laboratory activities are classified as laboratory/industrial type and office type. Examples of laboratory/industrial type activities include: experimental research, applied research, production, maintenance, fabrication, construction, hazardous waste handling, and warehouse shipping and receiving activities. Examples of office type activities include: theoretical research, computational, design, and administrative activities. The identification of hazards associated with activities is accomplished by utilizing a checklist of potential environmental, safety, and health concerns, the Readiness Review Hazard Identification Checklist. The identification of hazards should be undertaken without consideration of the administrative and physical controls used to mitigate hazards. All activities are categorized into one of three ES&H hazard levels. The three levels are defined as:

ES&H Hazard Level I:

Hazard Level I activities have hazards similar to those encountered and/or accepted by the general public in an office environment.

ES&H Hazard Level II:

Hazard Level II activities have hazards similar to those encountered in a typical industrial / laboratory environment.

Hazard Level II activities have been further categorized by risk into Elevated, Medium, and Low categories.

ES&H Hazard Level III:

Hazard Level III activities have hazards that involve a larger scope than impacts upon a single work site or laboratory area.

Readiness Review
All laboratory/industrial type activities are required to undergo a readiness review and be approved: (1) before acquisition, fabrication, or testing; and, (2) before operation. Approvals and reviews are documented by the Readiness Review Activity Approval Form, in accordance with the procedure for Readiness Review. Activities which undergo a modification are also subject to a readiness review if the modification significantly alters the hazards associated with the activity or if the risk associated with a particular hazard is increased. Activities in which the hazards have changed may be identified by reviewing the Readiness Review Hazard Identification Checklist. Examples where the risk associated with a hazard has increased is the scale-up of an activity where larger quantities or a different class of hazardous chemical are to be used.

1.10.2.2 Safety Review Committee (SRC) Subcommittees

Electrical Safety Committee (ESC)
The Laboratory Director established the Electrical Safety Committee (ESC) in 1993. The ESC reports to the Safety Review Committee (SRC) and to the Ames Laboratory Director through the SRC. The ESC establishes policies and procedures related to electrical safety issues in research and operational activities. The ECS also maintains the Ames Laboratory Electrical Safety Manual. The ESC is the authority having jurisdiction (AHJ) for the interpretation and the implementation of the National Electric Code (ANSI/NFPA70); Occupational Safety and Health Act (OSHA 29 CFR 1910, Subpart S, and 29 CFR 1926, Subpart K); and/or other applicable federal, state, and local codes/standards.

Fire Safety Committee (FSC)
The Ames Laboratory Director established the Fire Safety Committee (FSC), as a subcommittee of the Safety Review Committee in 1999. The committee is comprised of technical specialists from ESH&A and Facilities Engineering Services (FES). The committee is the local authority having jurisdiction (AHJ) for fire safety issues.

As Low As Reasonably Achievable (ALARA) Committee
The ALARA committee serves as the governing body for all aspects of ionizing radiation protection within the Laboratory and reports to the Safety Review Committee (SRC). The ALARA committee ensures all possession, use and disposition of sources of ionizing radiation by Ames Laboratory personnel complies with the requirements of 10 CFR 835, Occupational Radiation Protection and the Ames Laboratory Radiological Protection Program (RPP), and radiation exposures are maintained ALARA. The ALARA committee is composed of individuals who represent the various application of ionizing radiation within Ames Laboratory and are knowledgeable and experienced in the safe usage of ionizing radiation sources, as well as individuals representing ESH&A, FES Occupational Medicine, the Ames Laboratory Executive Council and ISU Environmental Health and Safety (EH&S). The Radiation Safety Officer is an ex officio member of the committee.

Laser Safety Committee (LSC)
The LSC was established in 2005. The specific responsibilities of the LSC include advising the SRC on adequacy of laser safety policies and procedures, and advising ESH&A on programmatic aspects of laser safety at Ames

Laboratory with an emphasis on a sound assessment process. Membership of the LSC includes representatives from Science and Technology Division, and representatives from ISU Environmental Health & Safety (EH&S) and ESH&A.

1.10.4 Training Requirements

General Employee Training (GET) For New Employees (AL001).

1.10.5 Roles and Responsibilities

Division, Institute and Program Directors and Department Managers:

- Review ES&H hazard identification checklists.

Group Leaders:

- Identify activities and associated hazards and undertake readiness review and comply with readiness review recommendations.

ESH&A:

- Administer the readiness review processes and maintain appropriate documentation and database information.

1.10.6 References

ALARA Committee Charter
Electrical Safety Committee (ESC) Charter
Fire Safety Committee (FSC) Charter
Integrated Safety Management System
Laser Safety Committee (LSC) Charter
Safety Review Committee (SRC) Charter
10 CFR 835 Occupational Radiation Protection
Readiness Review Procedure (Procedure 10200.010)
Readiness Review Hazard Identification Checklist (Form 10200.003)
Readiness Review Activity Approval Form (Form 10200.004)
Radiological Protection Program (RPP) (Plan 10202.004)

1.11 Reporting of Events

This sub-section applies to all employees.

1.11.1 Background

Effective response to environmental, safety and health events requires timely notification of the appropriate organizations. Ames Laboratory has numerous reporting responsibilities related to environmental, safety and health events. These requirements include:

- Occurrence Reporting and Processing of Operations Information DOE Order 232.1; reporting of radiological and health and safety non-compliances according to the Enforcement Process Overview;
- Reporting of injuries and illnesses to the Computerized Accident/Incident Reporting System (CAIRS), a database used to collect and analyze DOE and DOE contractor reports of injuries, illnesses, and other accidents that occur during DOE operations as required by DOE Order 231.1B Environment, Safety and Health Reporting;
- Reporting of incidents of security concern as DOE 470.4B Safeguards and Security Program.

1.11.2 Program Information

Notification of events shall be given to supervisors, group leaders, and ESH&A office. Employees are required to notify supervisors, and group leaders of all work related injuries and illnesses in a timely manner. Injuries and illnesses requiring first aid or treatment from a trained medical provider shall be reported to Occupational Medicine (515-294-2056). All other events require timely notification of supervisors, group leaders and the ESH&A office (515-294-2153). In addition, security related events shall be reported to the appropriate safeguards and security personnel. Plant Protection is available for notification at all hours by calling 515-294-3483. **For emergency events call 911.**

Near Misses: Experience in both the Department of Energy (DOE) and in industry show that accidents that claim a life or result in serious personal injury or environmental damage are often preceded by precursor or near miss events. Simply stated, a near miss is when an otherwise reportable event, such as an injury or release, was avoided by only a single barrier or when all of the conditions necessary to cause an event existed (i.e., when all barriers were compromised). The capture and dissemination of information from near miss events should provide a better chance of avoiding serious injuries, fatalities, or environmental impacts from future events.

Investigation of Events: Incident and accident information is developed according to the requirements of the Accidents, Incidents & Employee Safety Concerns: Classification & Investigation procedure.

Corrective Action Development and Tracking: Corrective actions are developed and assigned as needed according to the results of the event investigation. The ESH&A office is responsible for the tracking and closeout of safety related corrective actions. Significant institutional issues derived from Type A and B investigations, from DOE program initiatives and from DOE surveillance activities are addressed by corrective action plans developed according to the requirements of the Corrective Action Plan.

Lessons Learned: Lessons learned from internal and external events are distributed by ESH&A according to the elements of the Operating Experiences and Lessons Learned Program.

Trend Analysis: ESH&A conducts an annual trend analysis of safety information according to Trend Analysis of ES&H Concerns.

Reporting: The Event Reporting Plan details reporting requirements.

1.11.3 Training

General Employee Training (GET) for New Employees (AL001).

1.11.4 Roles and Responsibilities

All Employees:

- Report incidents, accidents, injuries and abnormal events in a timely fashion.
- Cooperate with investigative and corrective efforts related to incidents, accidents, injuries and abnormal events.

ESH&A:

- Investigate and report incidents, accidents, injuries, and abnormal events, and maintain appropriate documentation.

1.11.5 References

DOE Order 231.1B Environment, Safety and Health Reporting
DOE Order 232.1Occurrence Reporting and Processing of Operations Information
DOE 470.4B Safeguards and Security Program
Plan 10200.020 Ames Laboratory Lessons Learned Implementation Plan (Plan
Plan 10200.002 Event Reporting Plan
Accidents, Incidents & Employee Safety Concerns: Classification & Investigation (Procedure 10200.038)
Corrective Action Plan Development (Procedure 10200.039)
Trend Analysis of ES&H Concerns (Procedure 10200.041)